

SECTION 02720

MANHOLES, INLETS AND CATCH BASINS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

This section covers the requirements for furnishing and installing of manholes, inlets, catch basins and standard valve boxes. All referenced sections and subsections are from the State of Hawaii, Department of Transportation "Standard Specifications for Road and Bridge Construction."

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Concrete for these structures shall be of the class specified and shall conform to the requirements of Section 601 - Structural Concrete.
- B. Brick for water valve manhole shall be concrete brick and shall conform to the requirements of Subsection 704.02 - Concrete Brick.
- C. Other materials shall meet the requirements specified in the following subsections of Division 700 - Materials.

Asphalt Filler	702.07
Trench Backfill Material	703.21
Clay or Shale Brick	704.01
Waterproofing Type C Asphalt	705.06(C)
Mortar for Manholes	705.08
Reinforcing Steel	709.01
Precast Concrete Units	712.06
Frames, Grates, Covers and Ladder Rungs	712.07
Pipe Collar for Valve Box	712.22

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- D. When the location of manufacturing plants allows, the plants may be inspected periodically for compliance with specified manufacturing methods, and material samples may be obtained for laboratory testing for compliance with materials quality requirements. This can be the basis for acceptance of manufacturing lots as to quality.
- E. All materials will be subject to inspection for acceptance as to condition at the latest practicable time the Engineer has the opportunity to check for compliance prior to or during incorporation of materials in the work.

## 2.2 CONSTRUCTION REQUIREMENTS

- A. General. Concrete construction shall conform to the requirements of Section 503 - Concrete Structures.
- B. Reinforcing steel work shall conform to the requirements of Section 602 - Reinforcing Steel.
- C. Shop and field welding shall be done by a certified welder in accordance with the requirements of Section 501 - Steel Structures.
- D. Brick shall be dipped in water or otherwise soaked before being laid. Joints shall be full mortar joints and shall not be more than 1/2-inch wide. The joints in the brick work on the inside of the brick manhole shall be neatly struck.
- E. Manholes, Inlets and Catch Basins. The concrete base shall be constructed as detailed on the plans and allowed to set for at least 24 hours before additional material is constructed on this base. Forms for the concrete portion of the manhole shall not be removed for at least 24 hours after concrete is placed and all necessary finishing shall be done immediately while the concrete is still green.
  - 1. Sewer Manholes. Sanitary sewer manholes which are 10 feet deep or less from the invert to the top of the frame may be made entirely of brick from the concrete base upwards, provided that the invert is not below the ground water table and the manhole is located in a relatively dry area. Portions of manhole walls below the 10-foot depth shall be of concrete, unless otherwise shown on the plans.

The shaping and finishing of sanitary sewer manhole inverts shall be done by an expert cement finisher using approved mortar.

The outside of the brick portion of sewer manholes shall be plastered with a one-inch thickness of approved mortar. The interior brick work shall be plastered to present a smooth surface.

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2. Water Valve Manholes. In all areas where any portion of the brick manholes is below the 4-foot elevation, USGS datum, or ground water table, the depth of the manhole below such elevation shall also be made waterproof by the application of an interior and exterior coat of approved mortar. The mortar coat shall have a thickness of not less than 5/8 inch on each face and shall extend from the 4-foot elevation or ground water table down to the bottom of the floor slab on the outside of the manhole and to the top of the floor slab on the inside of the manhole.

In all types of water valve manholes, a space of at least 2 inches shall be left between the brick and the upper half of the barrel of the pipe and shall be filled with a specified asphalt filler. Reinforced concrete lintels, fabricated from Class B Concrete, shall be installed in Type A Manholes as shown on the plans.

Upon completion, the manhole shall be thoroughly cleaned of all debris and the frame and cover painted with one coat of approved asphaltum paint.

3. Storm Drain Manholes, Inlets and Catch Basins. Rungs are required at 12 inches on centers when the height of the structure is greater than 4 feet 6 inches from the invert to the top of the structure. When the height of the structure is 4 feet 6 inches or less, one rung shall be installed 16 inches from the bottom or as directed by the Engineer. An additional rung shall be installed when directed by the Engineer.

Precast concrete storm drain manhole sections shall be constructed in accordance with the details shown on the plans and to the requirements of ASTM C 478.

Reinforcing steel for precast sections shall be placed in accordance with the requirements of ASTM C 478.

- F. Setting Frames. Frames to be set in concrete shall be placed in the exact position required and the concrete carefully tamped around the frame. Frame to be placed on mortar beds shall be set in full mortar beds and the mortar shall be brought up around the bottom of the frame.
- G. Excavation and Backfill. Excavation and backfill shall be done in accordance with the requirements of Section 206 - Excavation and Backfill for Drainage Facilities.
- H. Reconstructing Manholes. When specified on the plans or in the special provisions, existing manholes shall be reconstructed to the required elevations in accordance with the applicable provisions of these specifications and as directed. The manhole or foundation below the frame shall be adjusted to the required grade using the same type of material used in its original construction unless otherwise directed by the Engineer. In addition, the existing frame and cover shall be carefully removed, cleaned and painted with approved asphaltum paint prior to reinstallation.

END OF SECTION

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